

REMARKS

The Office Action mailed on February 04, 2005, has been reviewed and the comments of the Patent and Trademark Office have been considered. Prior to this paper, claims 1-27 were pending, with claims 3-15 being withdrawn. By this paper, Applicants cancel claims 11-19 and add claims 28-31. Therefore, claims 1-10 and 20-31 are pending.

Applicants respectfully submit that the present application is in condition for allowance for the reasons that follow.

Rejections Under 35 U.S.C. §§ 102/103

Claims 21-24 stand rejected under 35 U.S.C. §102(b) as being anticipated by JP 9-291337 or in the alternative under 35 U.S.C. §103(a) in view of that same reference.

JP '337 does not teach the recitations related to normalizing. Moreover, JP '337 does not teach the recitations related to forging. The Office Action asserts that JP '337 discloses tempering at 810 to 600C. This is not the case. Finally, JP '337 also does not disclose the recited surface hardness of 91 to 96 HRB. JP '337 also does not teach the recitations of claims 16-19, now present in claim 1. Thus, JP '337 does not anticipate claim 1, and, therefore, cannot anticipate dependent claims 21-24.

Applicants respectfully request that the PTO cite exactly where in JP '337 such alleged anticipatory teachings may be found if this reference is again used to reject any claims in the future.

As to the alleged obviousness of claims 21-24 in view of JP '337, this will be discussed below.

Claim Rejections Under 35 U.S.C. §103(a)

In the Office Action, Claims 1-2, 16-20 and 25-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Watari (U.S. Patent No. 6,475,305). Moreover, claims 1, 2 and 16-20 are rejected as being obvious in view of Japanese Patent 2002-12941. Also, claims 21-24 are alleged to be obvious in view of JP '337. Applicants respectfully traverse the rejection as to the claims above, and submit that these claims are allowable for at least the following reasons.

Applicants rely on MPEP § 2143, which states that:

[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that at least the first and third criteria of MPEP § 2143 have not been met in the Office Action.

* * * * *

As to Japanese Patent 2002-12941, it is respectfully submitted that this reference is not prior art under U.S. law. JP '941 was published on January 15, **2002**, whereas Applicant's invention was filed in the United States on November 30, **2001**. Thus, irrespective of the disclosure of JP 2000-380666, the Japanese document from which this application claims priority, JP '941 is not prior art because the present application was filed in the United States over 45 days before the publication, in Japan, of JP '941. Therefore, Applicants traverse the rejections detailed in paragraphs 8-13 of the Office Action for at least this reason. All further comments related to the documents used to reject the claims under §103(a) will be in regards to U.S. Patent No. 6,475,305 to Watari and JP '337.

Neither Watari Nor JP '337 Suggest All Claim Recitations

Even if the first requirement of MPEP § 2143 was satisfied in the Office Action (which it is not, as explained below), neither Watari nor JP '337 meet the third requirement, after entry of the above amendments to claim 1 (incorporating the recitations of claims 16-19 therein), which is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.”

As a preliminary matter, the Office Action fails to sufficiently address the recitations of claims 16-19 (now placed into independent form via the amendment to claim 1), and the recitations of claims 21-24. In fact, *the rationale for rejecting these claims directly conflicts with the requirements of the cited MPEP section, section 2113.*

Nowhere in MPEP §2113 does it states that the “burden falls to the applicant to shows that any process steps associated with the claimed product results in a materially different product . . . because there is nothing in the record before the examiner to reasonably conclude that applicant’s product differs.” Just the opposite is the case. MPEP §2113 states that, while the PTO “bears a *lesser* burden of proof in making out a case of prima facie obviousness for product-by-process claims,” “o*nce the Examiner provides* a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art . . . *the burden shifts* to applicant.” (MPEP §2113, second paragraph, emphasis added.)

It is respectfully submitted that because no rationale has been provided tending to show that the invention of claims 16-19 (now placed into independent form via amended claim 1) is the same or similar to the teachings of any reference, a *prima facie* case of obvious has not been established, and these claims (and thus the amended claim 1) are allowable.

* * * * *

Notwithstanding the above, it its respectfully submitted that the references fail to teach the recitations of claim 1, as amended to include the recitations of claims 16-19, such as that the steel is treated by *warm-forging performed under a heating condition between 720*

°C and 790 °C, normalizing performed by keeping the steel at 850 ± 10 °C, cooling at a rate of 3 to 10 °C/min. after normalizing, keeping at 550 °C for 20 minutes or more and cooling to ambient temperature in air so that a surface hardness thereof is in a range from 91 to 96 HRB. Such a steel, treated, normalized and cooled, as claimed in claim 1, is distinct from any steel taught or suggested by Watari, even if the elemental percentage composition of a steel taught by Watari falls within the recited ranges of claim 1. In particular, such a steel has capabilities with respect to additional hardening of the steel, such capabilities being concomitant with steels utilized in “a steel for a high-strength race.”

For example, no steel of Watari, meeting the recited elemental percentage composition and hardened as claimed, is capable of later being hardened to 58 HRC.¹ It is respectfully submitted that the skilled artisan would have been (and would be) able to distinguish the steel of Watari from that claimed in claim 1 for at least this reason. Thus, the capability of being hardened to 58 HRC is a property according to the claimed steel that is distinct from the steels of Watari.

It is submitted that the skilled artisan would have recognized this limitation with respect to hardening for a number of reasons. Indeed, the skilled artisan would have been able to analyze the grain size of the steel according to Watari and determine the capabilities of the steel with respect to hardening. It is well known that forging a steel at higher temperatures typically imparts a drive force that results in larger grain size. Conversely, forging a steel at lower temperatures typically results in a steel having smaller grain size. (Applicants provide, in Exhibit I, an excerpt from page 80 of *The Material Science of Steel*, revised edition, by Keize Monma, Zikkyo Shuppen Co, Ltd., as evidence supporting this position.) The steel of Watari, which is hot forged at temperatures of 1000C – 1250C (as compared to the steel according to claim 1, which is warm forged at 720C – 790C), results in a larger grain size relative to the steel as claimed in claim 1 due at least to the different

¹ Pages 8-13 of the specification detail that the steels according to claim 1 have a hardness of 58 HRC or more after induction hardening is carried out.

forging temperatures, and thus the steel of Watari is limited in its capability of being hardened.

Moreover, even if Watari does disclose steels having surface hardnesses of 160-350 HV, as asserted in the Office Action, the examples of the steels detailed in Watari that are **normalized** do not have hardnesses that fall within the recited range of 91 to 96 HRB. (Applicants refer to the conversion chart submitted with the December 09, 2004, Response for correspondence between HRB and Hv, etc.)

Also, this issue related to hardening (that the steel of claim 1 may be hardened to 58 HRC or more) underscores the fact that the steel of claim 1 is suitable for use in a high-strength race, as is recited in the preamble of claim 1. Indeed, the skilled artisan would understand that the language “a steel for a high-strength race,” should be treated as a limitation, as such a recitation connotes qualities of the steel according to claim 1 that differentiate such a steel from any steel according to Watari. No steel of Watari would produce an acceptable race as that taught by the application, as those steels are not capable of being sufficiently hardened. This is yet another difference between the steel of claim 1 and Watari.

As to claims 25-27, it is respectfully submitted that these claims are allowable for the pertinent reasons that make claim 1 allowable, as detailed above. Further, the Office Action recognizes that the difference in forging temperatures between Watari and claim 1 is over 405C, but asserts that there *has been no showing that the recited forging temperatures are critical*. In response, it is submitted that forging at the claimed temperatures is critical to the claimed invention for at least the reason that forging at a lower temperature permits the steel to be later hardened to 58 HRC, and thus used for a high-strength bearing race.

* * * * *

As to claims 21-24, these claims are not obvious in view of JP '337. As demonstrated above, JP '337 does not teach each and every element of claim 1, and thus the third requirement of MPEP 2143 cannot be satisfied by JP '337 alone. Also, the Office Action does not proffer any rational as to why any deficiency of JP '337 is so insubstantial from a

patentability perspective that that deficiency may be ignored to formulate an obviousness rejection as a matter of law.

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In sum, even if the first requirement of MPEP § 2143 is satisfied, the third requirement of MPEP § 2143 is not satisfied in the Office Action, since the cited references do not teach each and every element of the present invention. Thus, the present claims are allowable.

Lack of Suggestion or Motivation to Modify Watari or JP '337

MPEP § 2143.01 states that “the prior art *must* suggest the desirability of the invention. In the Office Action, there is no rationale proffered as to why the skilled artisan would have modified Watari to arrive at the invention of any of the claims.

Applicants respectfully submit that the skilled artisan would have recognized that Watari could not be hardened to 58 HRC or more, for the pertinent reasons detailed above, and thus would have been discouraged from modifying Watari to arrive at the invention of any of the claims – namely, a steel for a high-strength race. Thus, a *prima facie* case of obviousness in view of Watari has not been established for yet another reason.

Also, the Office Action is completely silent as to any teaching or motivation in the prior art indicating that it would have been obvious to modify JP '337. Indeed, the Office Action merely identifies the alleged teachings of JP '337 as compared to the claims, but does not proffer any rationale to modify JP '337 to remedy its many deficiencies detailed above. Thus, the Office Action has failed to make out a *prima facie* case of obviousness in view of JP '337.

New Claims

As seen above, Applicants have added new claims 28 - 31. These claims are allowable for reasons analogous to those that make claims 1 and 2 allowable, as detailed above.

Conclusion

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Examiner Yee is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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EXHIBIT I

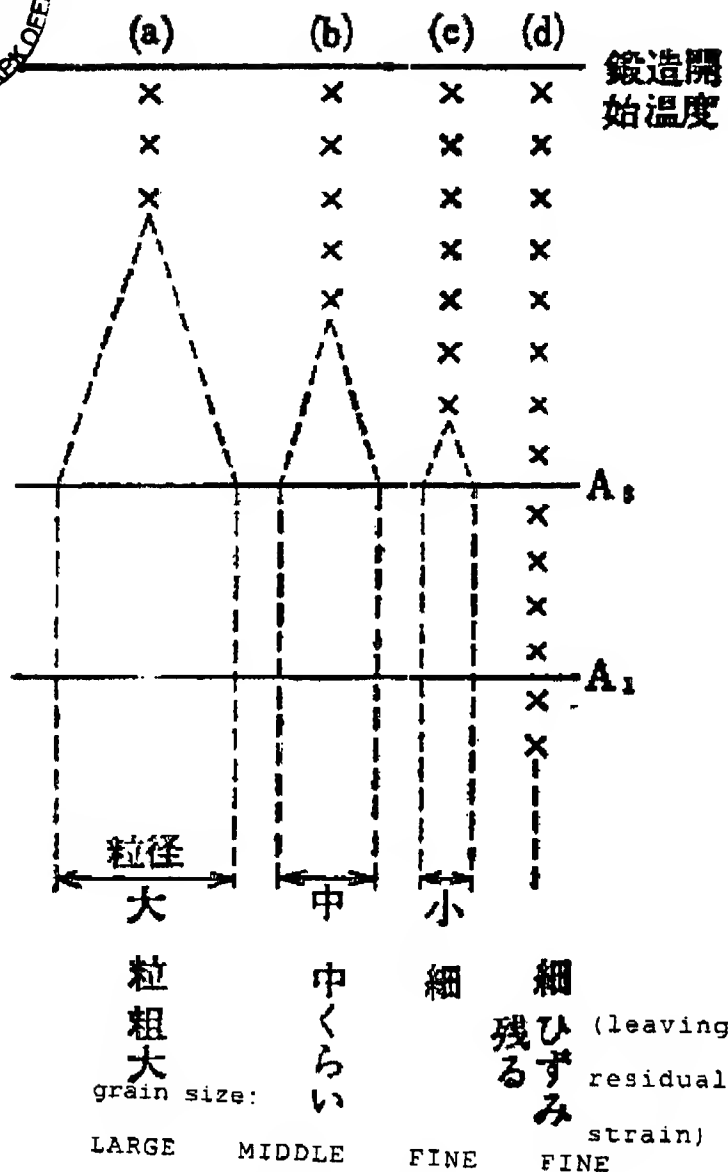


図 3-14

鋼の鍛造終了温度とオーステナイト結晶粒の関係

- (1) ×印の終わったところを鍛造終了温度とすると、高温で終了したものはオーステナイト粒が大きい。
- (2) ×印の一つずつを鍛造の強さとすれば、軽度の鍛造をしたものは、粒が大きい。

A temperature at which forging is started

Fig. 3-14

A relation between finishing temperatures of forging of a steel and austenitic grain sizes of the steel.

(1) Provided that x marks represent temperatures of forging, higher finishing temperatures result in larger austenitic grain sizes.

(2) Provided that the numbers of x marks represent degrees of forging, lighter forging results in a larger grain size.